Elkhorn Creek Best Management Practices Demonstration Project

Project Description: Elkhorn Creek drains 311,000 acres in Fayette, Franklin, Scott, and Woodford Counties. At one time the stream was ranked among the best in the nation for smallmouth bass fishing. The stream continues to be a valuable recreational resource to the area, and has provided an emergency source of drinking water during prolonged summer droughts. However, the Elkhorn Creek watershed has been identified as impaired due to sediment, nutrient, and pathogen loading from nonpoint and point sources of pollution. Livestock production is important in the watershed, and potentially contributes a significant part of the nonpoint source (NPS) pollutant loading. Direct access of livestock to streams within the watershed contributes to the stream degradation. This degradation affects: water quality, aquatic habitat, and recreation activities. Primary contact recreation (swimming) and warm water aquatic habitat uses are being adversely affected in much of the watershed. Moreover, riparian vegetation provides the major adjoining wooded area and crucial wildlife habitat within the watershed.

Often, traditional methods of excluding livestock from streams and providing livestock water supply are not cost-effective or practical. However, promising fencing systems and water supply alternatives are available. The principal objective of this project is to demonstrate to farmers the following four alternatives:

1. ram pump
2. pasture pump (cattle activated pump)
3. solar powered water pump
4. limited access watering points, using modern electric fencing components

These systems have the potential to protect stream quality while providing a cleaner and safer water supply for livestock. To facilitate the acceptance of new management practices, four demonstration farms were located in the watershed. Since this project emphasizes use of nontraditional best management practices (BMPs), the use of field days as an educational tool is very important, and is an integral part of the project.

Documentation of changes in water quality and habitat resulting from the use of BMPs is needed. One year of stream data was collected for each of four demonstration farm sites before installation of BMPs, and two years of post-BMP data are to be collected. Parameters measured include: Total Kjeldahl Nitrogen (TKN-nitrogen), Nitrite-Nitrate (NO_2-NO_3) nitrogen, ammonia (NH_3), total phosphorus, water pH, temperature, conductivity, turbidity, and fecal coliform. Monitoring is conducted at upstream and downstream stations at each site. Pre-BMP monitoring has been conducted at each of the four demonstration farm sites.

Pre-BMP monitoring results indicated BOD (5-day) values of generally less than 10-mg for both upstream and downstream sampling sites, fecal coliform ranging from 0 to 1900 col/dl (and generally less than 200 col/dl), average nitrite values less than 3-ppm, and dissolved oxygen values ranging from 4 to 14 mg/l. Seasonal variations in flow and temperature were documented. Data collected thus far indicate variability among locations monitored and

among months tested. However, variability between upstream and downstream testing at each location was generally minimal for most parameters tested.

Solar Unit

A solar powered livestock watering system has been installed on one monitored site in Woodford County. Livestock are excluded from the stream by a solar powered electric fence charger. Solar pump system performance has been very good. In full sunlight, the system pumps about 180 gallons per hour. System installation has not been completed at the other sites.

Additional demonstration farm sites have been completed in Scott County. One farm uses a pasture pump (also called a nose pump). This is a cow-activated diaphragm pump reputed to be quite dependable. However, this pump is limited in that it cannot be used when temperatures are below freezing. Another demonstration farm uses a limited access watering point, using modern electrified water gaps. This system reduces but does not eliminate livestock access to the stream.

The demonstration sites have provided opportunities for local farmers to share their experiences with alternative technologies for providing livestock water, and to encourage their neighbors to consider the benefits of reducing livestock access to riparian areas. The use of local examples has proven very effective in promoting non-traditional farm practices.

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